

# **METHOD AND APPARATUS FOR BANDWIDTH-EFFICIENT MULTICAST IN ETHERNET PASSIVE OPTICAL NETWORKS**

## **ABSTRACT**

One embodiment of the present invention provides a system that performs remote network management over an Ethernet connection between a local node and a remote node, wherein the Ethernet connection uses  $x$ -bit/ $y$ -bit ( $x$ B/ $y$ B) encoding. During operation, the system accepts a local Ethernet bit stream containing  $x$ -bit words at the local node. The system forms a second bit stream which carries network management information. The system then selectively encodes the  $x$ -bit words from the local Ethernet bit stream into  $y$ -bit words according to the bits from the second bit stream, thereby forming a third bit stream comprising  $y$ -bit words, wherein the third bit stream carries both information from the Ethernet bit stream and information from the second bit stream. The system then transmits the third bit stream on a physical medium from the local node to the remote node.